

PATENT SPECIFICATION



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COMPLETE SPECIFICATION

Improvements in Valves or Closures for Pneumatic Vessels

We, JAMES BENSON, of 23, Etherington Road, in the City and County of Kingston-upon-Hull, a British Subject, and TUCK AND COMPANY LIMITED, of 61, St. Mary Axe, London, E.C.3, a British Company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to valves or closures for pneumatic vessels such as, for example, the hollow bladders of fishing buoys, air cushions, or other inflatable vessels where only a low degree of pressure is necessary to maintain inflation, and wherein the valve has a passage of varying cross section, the elasticity of the walls of which being such that they normally tend to maintain the passage in a closed state.

According to the present invention in a closure for a pneumatic vessel of the type described the valve has a T-shaped head at one end and a projecting annulus at the other, and is supported in a body member which surrounds the valve and extends over the entire space between the projecting ends of the valve, said body member in turn being mounted on, as distinct from forming part of, the wall of the pneumatic vessel.

The mouth of a person may be applied to the exterior end of the tubular portion of the valve, and pneumatic force causes the restricted portion of the valve to be distended so permitting the free passage of air to the interior of the bladder. Conversely, when such pneumatic force ceases, the inner end of the valve, by reason of its elastic nature and assisted by the internal pressure of the bladder, restricts the passage through the valve to maintain the air inside the bladder.

Where a relatively higher degree of pressure than that obtainable by pneumatic action is necessary, a suitable connection of an air pump may be introduced into the open end of the tubular portion.

To permit of the deflation of the bladder, the restriction in the valve may be relieved by the insertion of a finger or a suitable implement, or the valve element may be withdrawn from the body portion.

The invention is more particularly described with reference to the accompanying drawings which show several forms of construction, and in which:—

Figure 1 is a sectional elevation of one form of valve.

Figure 2 is a sectional elevation in a longitudinal plane normal to that of Figure 1.

Figure 3 is a sectional elevation showing the valve of Figure 1 mounted in position in a body member secured to a bladder or other inflatable vessel.

Figure 4 is a corresponding plan view.

Figure 5 is an inverted plan view.

Figure 6 is a sectional elevation through a valve and body member applied to a football, the section being in a plane similar to that employed in taking the sectional view according to Figure 3.

Figure 7 is a sectional view through a still further modified form of construction showing a recessed body member for receiving the valve.

In the construction according to Figures 1—5 the valve member is made of rubber or elastic material substantially in the form of a T having a longitudinal bore 20 over a portion of the length of the shank 21 and a slit 22 over the remaining portion. The slit is of such a nature that the inner faces 23, 24, of the side walls forming the shank 21 contact until pressure is applied at the inlet end 25 of the longitudinal bore 20 of the valve to inflate the bladder or other vessel on which the valve is mounted.

The lower end of the valve has a projecting annulus 26, the diameter of the outer edge of which is less than that of a head 29 of the valve and when the valve is seated on a body member 27, which preferably is also of elastic material and has an annular flanged head adapted to be mounted on the inflatable vessel 28, such body member 27 surrounds the valve and extends over the entire space between the head 29 of the T-shaped valve and the annulus 26 at the opposite end of the shank 21. It will be appreciated, of course, that although surrounded by the body member, the valve is at all times capable of detachment therefrom to assist in deflation when

desired.

In the construction according to Figure 6 the valve itself is constructed substantially similar to that of Figure 1 except that it is provided with an annular recess 31 in the head 29, this annular recess receiving the leather or other casing 32 which is separated from the usual rubber casing 28 by a washer 33. In this construction the body member 27, as in the constructions according to Figures 1—5, is secured to the inner rubber casing. This construction is suitable for footballs.

The characteristic feature of Figure 7 lies in the fact that a body member 34 has an arcuate recess 35 in its upper radial face to receive the head of the T-shaped valve and permit the outer radial face of the latter to lie flush with the body member.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A closure for a pneumatic vessel of the type described in which the valve is of

substantially T-shape having a head at one end and a projecting annulus at the other which is of smaller effective diameter than the head, and is supported in a body member which surrounds the valve and extends over the entire space between the projecting ends of the valve, said body member in turn being mounted on, as distinct from forming part of, the wall of the pneumatic vessel.

2. A pneumatic vessel as claimed in claim 1 in which the valve is detachably housed in the body member an annular flanged head of which is secured to the inflatable vessel, said body member being recessed at its flanged end to permit the T-shaped head of the valve to lie flush with the outer radial end face of the body member.

3. A pneumatic vessel having a valve member constructed and arranged substantially as described with reference to the accompanying drawings.

Dated this 22nd day of August, 1934.

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[This Drawing is a reproduction of the Original on a reduced scale.]

